Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

PVC Plant
Georgia Gulf Chemicals and Vinyls, LLC
Plaquemine, Iberville Parish, Louisiana
Agency Interest Number: 2455
Activity Number: PER20050018
Draft Permit 881-V2

I. APPLICANT:

Company:
Georgia Gulf Chemicals and Vinyls, LLC
P.O. Box 629
Plaquemine, LA 70765-0629

Facility:
Polyvinyl Chloride (PVC) Plant
26100 Highway 405 South, Plaquemine, Iberville Parish, Louisiana
Approximate UTM coordinates are 674.59 kilometers East and 3348.86 kilometers North, Zone 15

II. FACILITY AND CURRENT PERMIT STATUS:

Georgia Gulf Chemicals and Vinyls, L.L.C. (Georgia Gulf) owns and operates a polyvinyl chloride (PVC) plant in Plaquemine, Iberville Parish, Louisiana. The plant was built by Georgia Pacific in 1974. Georgia Gulf assumed operation of the unit in 1985. The PVC Plant currently operates under Permit No. 881-V1 issued on February 16, 2005.

Georgia Gulf submitted timely applications for initial Part 70 permits for all operating units of the chemical complex to operate pursuant to the "application shield" provided in the program.

Several Part 70 permits addressing portions of the Georgia Gulf facility have been issued. These include:

Permit #	Units or Sources	Date Issued
2056-V0	Cogeneration Unit	8/08/2005
2906-V0	EDC/VCM	9/21/2005
2030-V0	Caustic/Chlorine Unit	9/20/2005
1267-V0	Phenol Acetate Plant	9/21/2005
2330-V0	Nebraska Boiler	8/16/2004

There is currently one Part 70 application submitted to the Louisiana Department of Environmental Quality (LDEQ) undergoing the permit review process:

Permit #	Units or Sources	Date Issued
N/A	Wastewater Utilities	N/A

III. PROPOSED PERMIT / PROJECT INFORMATION:

Proposed Permit:
A permit application and Emission Inventory Questionnaire were submitted by Georgia Gulf on October 7, 2005 requesting a minor modification to the Part 70 operating permit. Additional information dated December 14, 2005, December 27, 2005, and January 19, 2006 was also received.

Public comment is required for this permit for the following reasons:
1. The addition of a federally enforceable emissions cap (EIQ No. V-CAP) requires public comment.
2. New point source, EIQ No. 3-05, emits VCM at an amount greater than the MER listed in LAC 33:III.5112, Table 51.1. Per LAC 33:III.5107.D.1.b, public comment is required for any new point source emitting a Louisiana toxic air pollutant by an amount greater than the MER.

A notice requesting public comment on the proposed permit was published in *The Advocate*, Baton Rouge, Louisiana, on **XXXXX**, and in the *Post/South*, Plaquemine, Louisiana on XXXXXX, 2006. A copy of the public notice was mailed to concerned citizens listed in the Office of Environmental Services Public Notice Mailing List on XXXX, 2006. All comments will be considered prior to final permit decision.

Process Description:
Georgia Gulf produces polyvinyl chloride (PVC) resins by polymerizing vinyl chloride monomer (VCM) in batch reactors which convert approximately 85% of the VCM charged in each batch to PVC. The completed batches are then pumped into blowdown tanks where unreacted VCM flashes overhead to be reclaimed by condensation. The blowdown tanks also serve as holding tanks for continuous feed of the slurry stripping columns.

Residual VCM is steam stripped from the PVC slurry in columns. All equipment, upstream of and including the slurry stripper, vents to the VCM recovery system which consists of vacuum pumps, compressors, and four stages of condensers using chilled water. Condensed VCM is recycled to the process. Non-condensibles are routed to the VCM Plant incinerators.

In the drying area, PVC slurry is dewatered by centrifuges, dried by fluidized bed dryers, screened by sieves, and pneumatically conveyed to product silos. PVC product is then transferred to railroad hopper cars and trucks for shipment to customers.

Particulate emissions from the dryers are controlled by cyclones with at least 99.97% removal efficiency. Particulates from product day tanks and storage silos are controlled by cloth filters and baghouses with at least 99.98% removal efficiency.

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Permit Description:
In the Title V permit application submitted by Georgia Gulf on October 7, 2005, Georgia Gulf requests the following items:

- Georgia Gulf requests authorization for a proposed project to modernize its PVC Plant through the installation of a new PVC production train. This project will increase production capacity by approximately 450 million pounds annually. New emission sources included with this project are as follows: Dryer 9 Centrifuges (EIQ No. 2-05), Blend Tank No. 6/Dryer No. 9 (EIQ No. 3-05), PVC Cooling Tower No. 2 (EIQ No. 6-05), Dryer Screener Overs Recovery System (EIQ No. 7-05), and Air Lock Vent Receiver (EIQ No. 8-05).

- Georgia Gulf proposes to establish a plant-wide emissions cap (EIQ No. V-CAP) for operational flexibility on both average hourly and annual emissions of particulate matter (PM_{10}), volatile organic compounds (VOCs), chloroform, methanol, phenol, and vinyl chloride.

- Georgia Gulf proposes to establish a maximum hourly limit on vinyl chloride monomer (VCM) and VOC emissions downstream of the PVC slurry strippers for each production train (EIQ Nos. V-1 through V-5 and V-Develop).

- Georgia Gulf requests approval to operate Day Tank No. 9 and Day Tank No. 10 (EIQ No. 2-82 and 3-82, respectively) as dual service tanks. These tanks currently store PVC product, but Georgia Gulf is proposing to also use them to store centrate water. When storing PVC product, the tanks shall control particulate emissions using a baghouse; when storing centrate water, the baghouse requirement will not apply since there will be no particulate emissions when in this service.

- Georgia Gulf requests the transfer of PVC Cooling Tower No. 1 (EIQ No. 11-99) and the PVC Lamellae System (EIQ No. 12-99) from the Title V operating permit application for the Wastewater Utilities Plant to this permit to allow all cooling towers associated with the PVC plant and all equipment being modified or constructed as part of the PVC Plant modernization project to be included in a single Title V permit.

- The regulatory applicability analysis and tables for several sources in the PVC Plant were updated.

- The maximum hourly Plantwide Fugitive Emissions (EIQ 1-86A) of vinyl chloride were reconciled based on more accurate data.

- Fugitives from Dumpster Storage were removed from the GC XVII activities list in the permit application and included as an emission point (EIQ No. 9-05).

- The General Condition XVII (GC XVII) and Insignificant Activity lists were updated.

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Permitted Air Emissions

Estimated changes in permitted emissions from the PVC Plant in tons per year are as follows:

Pollutant	Permitted Before	Permitted After	Permitted Change
PM_{10}	33.22	54.80	+ 21.58[1]
SO_2	-	-	-
NO_X	-	-	-
CO	-	-	-
VOC[2]	48.43	49.27	+ 0.84

[1] Increase in emissions is due to the addition of sources 4-05, 5-05, and 6-05 from the PVC modernization project, and to the inclusion of sources 11-99 and 12-99 from the Wastewater Utilities Plant Title V permit application.

[2] See VOC speciation below.

VOC LAC 33:III.Chapter 51 Toxic Air Pollutants (TPY):

Pollutant	Before	After	Change
Chloroform[2]	NP	0.20	+ 0.20
Methanol	11.64	12.95	+ 1.31
Phenol[2]	NP	1.36	+ 1.36
Vinyl Chloride	11.86	10.73	- 1.13
Total	23.50	25.24	+ 1.74

[2] Included in this permit due to the inclusion of cooling towers (EIQ Nos. 11-99, 12-99, and 6-05).

NP Not previously permitted.

Other VOC (TPY): 24.03

Regulatory Applicability

This permit was reviewed for compliance with 40 CFR 70, the Louisiana Air Quality Regulations and National Emission Standards for Hazardous Air Pollutants (NESHAP). New Source Performance Standards (NSPS) and Prevention of Significant Deterioration (PSD) regulations do not apply.

MACT Requirements

The Georgia Gulf PVC Plant is a major source of toxic air pollutants. Georgia Gulf meets MACT requirement by complying with the Vinyl Chloride NESHAP, 40 CFR 61, Subpart F – National Emission Standards for Vinyl Chloride. The PVC Plant will comply with the federal MACT requirements. In addition the PVC plant must comply with Air Toxics Compliance Plan No. 92049 approved June 13, 1995. State vinyl chloride residual requirement for PVC stripper is 47.5 ppm (quarterly average) vs. 400 ppm (daily average) in the federal NESHAP. State MACT for reactor opening losses is 0.0063 gVCM/kg of PVC product (quarterly average) vs. 0.02 g VCM/kg PVC product in the federal MACT.

Air Modeling Analysis
Dispersion Model(s) Used: <NONE>

Pollutant	Time Period	Calculated Maximum Ground Level Concentration	Louisiana Air Quality Standard (NAAQS)
N/A			

Impact on air quality from the emissions of the PVC unit is below the National Ambient Air Quality Standards (NAAQS) and the Louisiana Ambient Air Standards (AAS) beyond industrial property.

General Condition XVII Activities
The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to Section VIII of the draft Part 70 permit.

Insignificant Activities
All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to Section IX of the draft Part 70 permit.

Regulatory Analysis
The applicability of the appropriate regulations is straightforward and provided in the Specific Requirements Section of the draft permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are provided in the Specific Requirements Section of the draft permit.

IV. PERMIT SHIELD

A permit shield has not been requested.

V. PERIODIC MONITORING

The Title V permit requires Georgia Gulf to monitor Vinyl Chloride (VCM) emissions from all Reactor Openings. To meet the 10 ppm VCM limit on exhaust from the stripper and all equipment exhaust preceding the stripper, Georgia Gulf utilizes a VCM Recovery System which vents the recovery system exhaust to incinerators in the EDC/VCM plant. The incinerator exhaust is monitored by a CEMS (continuous emission monitoring system) to verify that the 10 ppm limit is met. For sources following the strippers, VCM emissions are due to unreacted VCM not completely steam stripped from the polymer product (PVC). Therefore, for all sources downstream of the strippers, VCM emissions are essentially determined by the efficiency of the strippers. The VCM content in each grade of PVC resin is determined at 8-hour intervals in accordance with methods of NESHAP Subpart F to ensure that the NESHAP maximum residual VCM standard of 400 ppm (daily average) is met, and that the State MACT standard of 47.5 ppm (quarterly average) is also met. For Fugitives monitoring, HON 40 CFR 63 Subpart H will be used as the overall most stringent requirements. In addition to the LDAR monitoring program, NESHAP Subpart F requires an area vinyl chloride CMS (continuous monitoring system) to analyze air samples taken from strategic points in the plant to alert the plant of major vinyl chloride leaks.

VI. APPLICABILITY AND EXEMPTIONS OF SELECTED SUBJECT ITEMS

ID No:	Requirement	Notes
GRP042 PVC Plant	40 CFR 63 Subpart J National Emission Standards for Hazardous Air Pollutants for Polyvinyl Chloride and Copolymers Production	Permittee shall comply with all applicable requirements of 40 CFR 61 Subpart F. [40 CFR 63.214]
	40 CFR 61.342(b) and (c), Subpart FF National Emission Standards for Benzene Waste Operations	**EXEMPT.** The Plaquemine has less than 1 Mg/yr benzene waste and is exempt from the standards of 40 CFR 61.342(b) and (c) per 40 CFR 61.342(a). A report summarizing the status was submitted 4/7/93 in accordance with 40 CFR 61.357(a) and (b). [40 CFR 61.342(a)]
GRP016 **Blend Tank Group** EIQ Nos. 7-73A, 7-73B, 7-73C, 7-73D, 7-73F, 23-80C, 23-80D, 23-80E, 23-80F, 3-05	40 CFR 60 Subpart Kb Standards of Performance for Volatile Organic Liquid Storage Vessels	**DOES NOT APPLY.** Tanks are process vessels. This Subpart does not apply to process vessels; process vessels are not considered storage vessels per 40 CFR 60.111b. [40 CFR 60.110b(a)]
Sources following Strippers 4-73, 15-94, 9-05, 7-73A, 7-73B, 7-73C, 7-73D, 7-73F,23-80A, 23-80B, 23-80C, 23-80D, 23-80E, 23-80F, 3-05, 13-73, 14-73, 15-73, 16-73, 17-73, 3-89, 25-73, 26-73, 27-73, 29-73, 7-80, 8-80, 2-82, 3-82, 2-89, 5-89, 31-73 through 38-73, 17-80, 18-80, 7-89, 8-89, 23-94, 7-05, 8-05, 1-78 through 8-78, 22-80, 24-80, 25-80, 1-89, 4-89, 2-94, 4-05, 5-94, 8-94, 10-94, 11-94, 12-94, 13-94, 14-94, 2-05,	40 CFR 61 Subpart F National Emission Standard for Vinyl Chloride	Weighted average residual concentration: Vinyl chloride <= 400 parts per million (ppm) in all PVC resins except dispersion resins, including latex resins, averaged separately for each type of resin, measured immediately after the stripping operation is completed. Subpart F. [40 CFR 61.64(e)(1)(ii)]

ID No:	Requirement	Notes
FUG005 19-80 Reactor Opening Losses	LAC 33:III.5109 Emission Control and Reduction Requirements and Standards	Permittee shall control emissions of toxic air pollutants to a degree that constitutes Maximum Achievable Control Technology (MACT) as approved by DEQ. Permittee shall not exceed a reporting quarterly average reactor opening loss (ROL) of 0.0063 g/kg. Quarterly ROL average shall be reported quarterly to the Air Quality Division concurrently with the 40 CFR 61 Subpart F quarterly report. Determined as MACT. [LAC 33:III.5109.A]
	40 CFR 61 Subpart F National Emission Standard for Vinyl Chloride	Reactor opening loss: Vinyl chloride <=0.02 g/kg (0.04 lb/ton) of polyvinyl chloride product, except as provided in 40 CFR 61.64(f)(1), with the product determined on a dry solids basis. Subpart F. [40 CFR 61.64(a)(2)]
FUG006 1-86A PVC Plant Fugitive Emissions	LAC 33:III.5109 Emission Control and Reduction Requirements and Standards	Control emissions of toxic air pollutants to a degree that constitutes Maximum Achievable Control Technology (MACT) as approved by DEQ. Compliance with 40 CFR 63 Subpart H (HON) constitutes MACT. [LAC 33:III.5109.A]

VII. STREAMLINED REQUIREMENTS

Unit or Plant Site	Programs Being Streamlined	Overall Most Stringent Program
FUG006 1-86A Plant Fugitive Emissions	40 CFR 63, Subpart H – HON*	40 CFR 63 Subpart H (HON)
	40 CFR 63 Subpart UU	
	LAC 33.III.Chapter 51	
	LAC 33.III.2122	
	40 CFR 63, Subpart J	
	40 CFR 61, Subpart F	
	40 CFR 61, Subpart V	

* 40 CFR 63, Subpart H (HON) is not applicable to the PVC Plant. However, Georgia Gulf proposes to consolidate under 40 CFR 63, Subpart H to promote consistency of fugitive monitoring requirements across the facility.

VIII. GLOSSARY

Best Available Control Technologies (BACT) - An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this part which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

CAM - Compliance Assurance Monitoring rule – A federal air regulation under 40 CFR Part 64

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Grandfathered Status - Those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

Hydrogen Disulfide (H_2S) - A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the action of acids on metallic sulfides, and is an important chemical reagent.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy

requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

NESHAP - National Emission Standards for Hazardous Air Pollutants – Toxic air emission standards for specific types of facilities, as outlined in 40 CFR Parts 61 through 63

Nitrogen Oxides (NO_x) - Compounds whose molecules consists of nitrogen and oxygen.

Nonattainment New Source Review (NNSR) - A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

NSPS - New Source Performance Standards – Air emission standards for specific types of facilities, as outlined in 40 CFR Part 60

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

Part 70 Operating Permit - Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: $\geq$ 10 tons per year of any toxic air pollutant; $\geq$ 25 tons of total toxic air pollutants; and $\geq$ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10} - Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO_2) – An oxide of sulphur.

TAP - Toxic Air Pollutant (LDEQ acronym for air pollutants regulated under LAC 33 Part III, Chapter 51, Tables 1 through 3

Title V permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.